

NAEB

Engineering Newsletter

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS

14 GREGORY HALL

DECEMBER, 1958

URBANA, ILLINOIS

TV TECHNICAL TIPS (October)

—CECIL S. BIDLACK

All of a sudden summer ends and again we're plunged into the midst of a busy fall season. School begins, the football season starts, renewed and increased programming begins on educational as well as commercial stations. Autumn, too, brings a round of technical meetings of value to all radio and TV station personnel. Although two of these meetings will be over before this appears in print, it will give you time to think and plan for next year, since the pattern repeats yearly.

The first of these meetings is the annual Fall Symposium of the IRE Professional Group on Broadcast Transmission Systems held at the Willard Hotel in Washington September 27-28. We'd guess that 125 were registered for the excellent two-day program just concluded. While the majority of the papers presented were on television topics, there were also papers on FM multiplex and stereophonic broadcasting. Three papers covered television switching facilities by relays, transistors, and a diode matrix vertical interval switcher. Other topics were precise carrier offset, the chroma-key effects system, and vidicon operating techniques. One afternoon session was devoted solely to video tape recording with descriptions of the NBC-Burbank color installation and the CBS-New York facilities, followed by a panel discussion of the uses and problems encountered in VTR operation at individual affiliate and network owned stations.

There was a tour of the new four million dollar NBC studios in Washington, which houses the WRC and WRC-TV studios and offices as well as FM and TV transmitters. The plant is designed to make most effective use of a minimum of operating personnel. All video controls for live and film cameras are located in one central control and transmission room. AM and FM studios are located in a cluster with all

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microphone outputs appearing on all control room consoles. Every studio is visible from each of the control rooms.

There are two TV studios, one large- and one medium-sized. Eventually these will be equipped for live color originations, with lighting boards relay operated so that the lighting for ten different sets can be arranged and then turned on as required by a control room panel switch. I was interested in the fact that no dimming facilities are provided for lighting.

By the use of punched paper tape and readout and memory devices, automatic TV operation is possible once the proper sequence has been set up on the tape. Automation is used primarily for station break operation during long stretches of network programming. This automation equipment can be clock-operated and switched from network to local, rolling and stopping projectors and switching between film and slide projectors as required and back into the network with operating personnel required only to supervise the operation and load the projectors.

We'd like to see more representation from educational stations at this IRE PGBTS meeting which is usually held the last week end in September. The 1956 meeting was held in Cleveland; Pittsburgh was host in 1957; and the 1959 meeting has tentatively been set again for Washington, D. C., with Detroit also a possibility.

— N A E B —

The Tenth Annual Convention of the Audio

Engineering Society is being held at the New Yorker Hotel September 29 - October 4 in conjunction with the New York High Fidelity Show and the Audio Engineering Show. Some NAEB technical personnel regularly attend this event, which is usually held in New York City the first part of October. A full five-day program of papers on audio subjects has been arranged covering stereo, acoustics, magnetic tape and recording techniques as well as new devices, measurements, standards, speech input equipment and loudspeakers. The program looks interesting—hope someone who attends will give us a report.

—N A E B—

We hope to see many of our readers at the NAEB Convention in Omaha, October 14-17. Jack McBride and his committee have been busy arranging a varied and worthwhile program.

—N A E B—

The week following the NAEB Convention, the 84th SMPTE Convention is being held at the Sheraton-Cadillac Hotel in Detroit. The October 22nd and 23rd sessions are of prime interest to ETV personnel. Wednesday morning (the 22nd) the general topic is television equipment and practices, while that afternoon kinescope recording problems and equipment will be discussed. The Thursday evening session (the 23rd) is given over to closed-circuit television for teaching, and educational, military and medical applications of closed-circuit systems will be described. The Thursday morning topic is machine language translation, while that afternoon the general topic is designing for international television where eventual contributions towards automatic translations and international standards will be discussed.

—N A E B—

Before we bring this column to a close perhaps we should include a couple of technical tips, since that's our heading; so here they are:

Factors for good vidicon performance.

1. Plenty of light.
2. Flat lighting.
3. Reasonable target temperatures.
4. A good camera.
 - a) Low noise input.
 - b) Linear scanning.
 - c) Aperture correction.
 - d) Gamma correction.
 - e) Stability and reliability.

Many times the company which is endeavoring to sell you new television equipment has used operable equipment on hand in its storage warehouse. This equipment may have been taken in trade or

have been returned as a result of the station leaving the air. Obviously, the salesman who calls on you is interested in selling the new equipment of the company he represents; however, his company is interested in disposing of this used equipment too. Why not ask about it?

TV TECHNICAL TIPS (November)

In our last column, we mentioned October meetings of interest to educational broadcasters. We thought the 34th Annual NAEB Convention in Omaha one of the best. Of the 227 persons registered, only five were engineers: Carl Menzer of WSUI-KSUI, Bud Phillips and Bob Stumme of the University of Iowa TV studio, Clarence Deal of KOKH, Oklahoma City and the writer. While this isn't a large representation, it's the best yet.

With next year's convention in Detroit, in the center of NAEB station concentration, we trust more engineers will be there. With the three studios of the Detroit ETV Foundation, as well as a number of educational radio stations, it isn't too early to begin plans for a one-day technical program. Ann Arbor is near, where the University of Michigan has three TV installations, as well as ETRC headquarters. We could make up an interesting tour and see how the Detroit area stations operate. I'm sure the 1959 Convention committee would appreciate your suggestions. You can send them to me and I'll see that they reach the right persons. In the meantime, you can begin working on the boss to take a carload of his staff to Detroit.

—N A E B—

We'd like to pass along the four points made by "Jim" Ebel, Vice-president and general manager of KOLN-TV, Lincoln, Nebraska, and former chief engineer of WILL, at the Wednesday afternoon panel session of the NAEB Omaha Convention. If I were an Educational Broadcaster, I would:

1. Try to have the best possible technical facilities, operations, and operating and maintenance practices.
2. Have a long range plan for technical improvement, which I would revise constantly.
3. Sell my staff on my station and its program because this is one of the best and most effective ways of promoting the station.
4. Determine the type and tastes of the audience I am trying to reach and program accordingly.

We believe that the above points, applied to any operation, would do much to make it a successful one.

We also want to mention a paper presented at one of the briefing sessions at the NAEB Convention, presented by Richard Vogl of WOI, at Iowa State College. Dick outlined their experiments in stereophonic broadcasting at Iowa State. He's promised to send us a copy which we'll mimeograph and distribute to you.

—N A E B—

A sub-committee of the NAEB Engineering Committee, and a committee set up by the Educational Radio and Television Center have begun work on the suggestions made at the NAEB Video Recording Workshop in May on Kinescope Recording Standards. The NAEB sub-committee met September 29 in Chicago, with Carl Menzer, Keith Ketcham and Cecil Bidlack representing NAEB and Allen DeLand representing ETRC. The following projects were cited as needing study:

1. A procedure for calibrating densitometers.
2. Use of EIA grayscales in live studios and evaluation of their use for proper studio camera adjustment.
3. An accurate technique for measuring print density ranges.
4. Determination of optimum print density ranges considering affiliated ETV stations.
5. Kinescope exposure adjustment including check list for beginning kinescope operators.
6. Standard film chain reproduction characteristic.

Since the ETRC Committee has been established as a short term project, while the NAEB Engineering Committee is a continuing one, there appeared to be work for both groups to accomplish both short and long range projects with a minimum of duplication. Consequently it was agreed that both organizations would work on item 1 above; that ETRC would also work on items 3 and 4 since these are of immediate concern to the Center and it is desired that they be brought to a successful completion as soon as possible; that NAEB would also work on items 2, 5, and 6 which, while desirable, would take additional time which the ETRC Committee would not have.

On October 19, the ETRC Committee met in Ann Arbor, with representatives from the NAEB, ETRC and its affiliates and film processing laboratories. It is hoped that within six weeks the three items above assigned to the ETRC Committee, can be implemented and sufficient data obtained to hold a second and final meeting to agree upon standards. These projects are densitometer calibration, electronic measurement of print density range and optimum density range for ETV prints. Since two of these projects will require the production of materials for densitometer calibration as well as the pro-

duction of test prints with varying end points and density spans for evaluation on station film chains, the cooperation and prompt action of all stations will be necessary to complete the project within the desired time. That is why we are mentioning this project so that you will be alerted and be ready to participate.

It is hoped that before this column gets into print, the data for the modification of the galvanometer mounting in GPL kinescope recorders to accommodate the I-prime galvo will have been secured, duplicated and made ready for distribution to kinescope operators. We'll keep you advised on further progress in the NAEB portion of this program.

—N A E B—

The 84th Semi-annual Convention of the Society of Motion Picture and Television Engineers, just concluded in Detroit, featured many papers on the uses of film and television in education. We believe a new high mark was set in the attendance of personnel from educational stations and institutions. Educational television technical personnel made a significant contribution to the program of the convention with papers presented by Keith Ketcham of WOI-TV, Fred Remley of the University of Michigan, C. M. Braum of JCET and John Brugger of Hagerstown, Maryland. Allen DeLand of ETRC and Keith Kossuth of Wayne University served as chairman and vice-chairman respectively for the evening session October 23 while the writer served as chairman for the morning session on the same date. Eight papers were presented by representatives of film, audio-visual or instructional departments of educational institutions.

Cy Braum made history by presenting his paper via closed-circuit TV. He read his paper from an adjacent room where the video signal from an RCA vidicon camera which was focused upon him was fed to a GiantView projection receiver providing a 6 x 9 foot picture on the screen in the Crystal Ballroom of the Sheraton-Cadillac. His voice was carried over the PA system. The demonstration was highly successful. Both picture and sound were excellent.

TV TECHNICAL TIPS (December)

Last month we promised a mailing of the data on modification of the galvanometer mounting platform on the GPL kinescope recorder. We don't have this data for you because the GPL and J. A. Maurer Companies haven't come to a definite decision on just how it's to be done. Here is what is involved in this modification.

First, there's no physical difference between the Model I and the I-Prime. The I-Prime is 3 db better at 7000 cycles, has 30% less distortion and gives better definition on the sound track. If your Model I galvo needs repair, an overhaul will cost you \$120 plus parts or it can be converted to the Model I-Prime for \$300. One reason for the modification of the mounting platform is to permit the use of an F-Prime (variable area) galvo. Since its snout is shorter, .270 inches of the shoulder of the platform must be milled off to permit proper focus on the film.

At the same time this milling operation is performed, Maurer representatives would like to see the method of mounting the galvo changed. They have machined the bottom of the galvo assembly and threaded it to permit it to be fastened by two screws from below. They feel that it is desirable to have the galvo mounting platform machined so that the galvo is set down on the plate, pushed forward against the milled shoulder and the screws tightened. Since the height of the center line of the optical system is fixed, and the azimuth of the track is factory adjusted parallel to the base, there is but one adjustment necessary, track position, when the galvo is changed. With the present system of mounting, sound track position, azimuth, and optical axis alignment with the center of the sound roller, may be changed in an attempt to adjust any one of them. To accomplish this improved method of mounting the galvo, a filter condenser under the camera base must be relocated and the necessary holes drilled for mounting screws as well as access holes for tightening them.

We now have complete information on the adjustments necessary when the repaired or modified galvo is reinstalled in the recorder. Three major adjustments are required, in addition to focusing; (1) alignment of center line of the optical system with center of sound roller, (2) sound track position, and (3) azimuth. These are the adjustments for which a charge of \$10.00 per hour is made at GPL. The preferred way of making the azimuth adjustment requires the use of a special alignment tool, costing \$90.00. This is a slit mask which replaces the mask normally used in the recording system.

We hope to have this information on its way to you before this is published. While the cost of the alignment tool is high, a group purchase of a number of these would bring the price down. When an improved method of mounting has been settled, you will be provided with the information so that it may be done locally. Mr. Belcher and Mr. Kelley believe that by performing the machining operation locally you can save several hundred dollars as well as minimizing the time you are without the use of

your recorder.

—N A E B—

For those of you who have film processors, the J. A. Maurer Co. is making a nylon film roller for use in processing machines. This newly designed roller has no metal parts and features sleeves and retaining rings of linen-base bakelite and glass ball bearings encased in nylon bearing cages. The rollers are unaffected by and will not affect industrial or processing solution or films. Prices and quantity discount schedules are available on request.

—N A E B—

We want to call attention to a paper presented at one of the briefing sessions at the NAEB Convention in Omaha, "Techniques of Off-the-air Pickup of Television Signals". It was presented by Jack Beever, applications engineer for the Jerrold Electronics Corporation. We are mailing these to Chief Engineers of all ETV stations. We have extra copies which will be sent to others interested up request.

—N A E B—

Patricia Green Swenson, manager of KBPS, the Portland Oregon Public Schools AM Station, sends us a report by her chief engineer, Harold Potter, on methods they have used in combatting radio interference caused by fluorescent lights. She also asks whether the modernization of school lighting has caused this same problem in other cities, and if so, what has been, is being, and can be done about it.

KBPS has been using two types of filters which they have found effective in four out of five cases. They are the Cornell-Dubilier, Model IF-18 and the Sprague, Model F-400. The major disadvantages of using the filters is their cost and the labor involved in installing them either on the receivers or in the electrical outlets.

Here is a chance for our readers to help in the solution of this problem. Please send your comments and suggestions to KBPS with a copy to me at NAEB Headquarters.

—N A E B—

Another excellent paper was presented at a briefing session of the NAEB Convention in Omaha by Richard F. Vogl, manager of WOI Radio. Its title is "Three Years of Stereophonic Broadcasting at WOI." The paper presents their experiences in stereophonic broadcasting and we believe it is of interest to all NAEB member stations. We're having it mimeographed and are mailing a copy to all chief engineers of educational radio and television stations. If we miss any one, we're sorry. If you'll drop us a card we'll be glad to mail you a copy.

—N A E B—

We've had an inquiry from Marshall Gunselman, Director, Audio Visual Center, David Lipscomb Col-

lege, Nashville 5, Tennessee inquiring where he can buy a used light weight FM transmitting antenna and also a used frequency and modulation monitor. If you have these items for sale, or know where they are available, he'd appreciate hearing from you.

—N A E B—

A new and improved Television Test Film is now available! The new film is a 35mm and 16mm television alignment and resolution test. The conventional resolution chart has been retained and both films are produced according to rigid standards as specified by the SMPTE Television Engineering Committee. The films are camera originals which completely eliminates the possibility of printer error. The target is illuminated with exceptional care and recent tests on a sample have shown that the density variation per area is less than .05. The film is available for immediate delivery through Society Headquarters, 55 W. 42nd St., New York 36, New York.

—N A E B—

A report entitled *Closed Circuit Television Installations in Educational Institutions* has been prepared by the Joint Council on Educational Television and the Committee on Television of the American Council on Education.

The report is dated July, 1958, and gives information on 133 closed circuit systems used by 119 educational institutions. Class instruction over these systems ranges from first grade through college post-graduate. There is also a report on military closed circuit installations.

Single copies are available free through the JCET to educational personnel. Bulk and business orders are 30 cents per copy.

—N A E B—

The map which fills the back page of this *Newsletter* is one prepared as an exhibit to be presented at the FCC hearing on Docket No. 11997 which covers allocations between 25 and 890 mc. It shows all non-commercial FM stations in the United States, a total of 164. We hope we didn't miss anyone.

We want to prepare a similar map for educational AM stations showing their coverage and directional patterns as well as a third map showing non-commercial educational television stations and their class B coverage. We'll need data from the stations concerned for these proposed maps so we urge your cooperation when you receive our request for this coverage data.

—N A E B—

The 1959 National Convention of the NAEB will be held October 27-30 at the Sheraton-Cadillac Hotel in Detroit, Michigan.

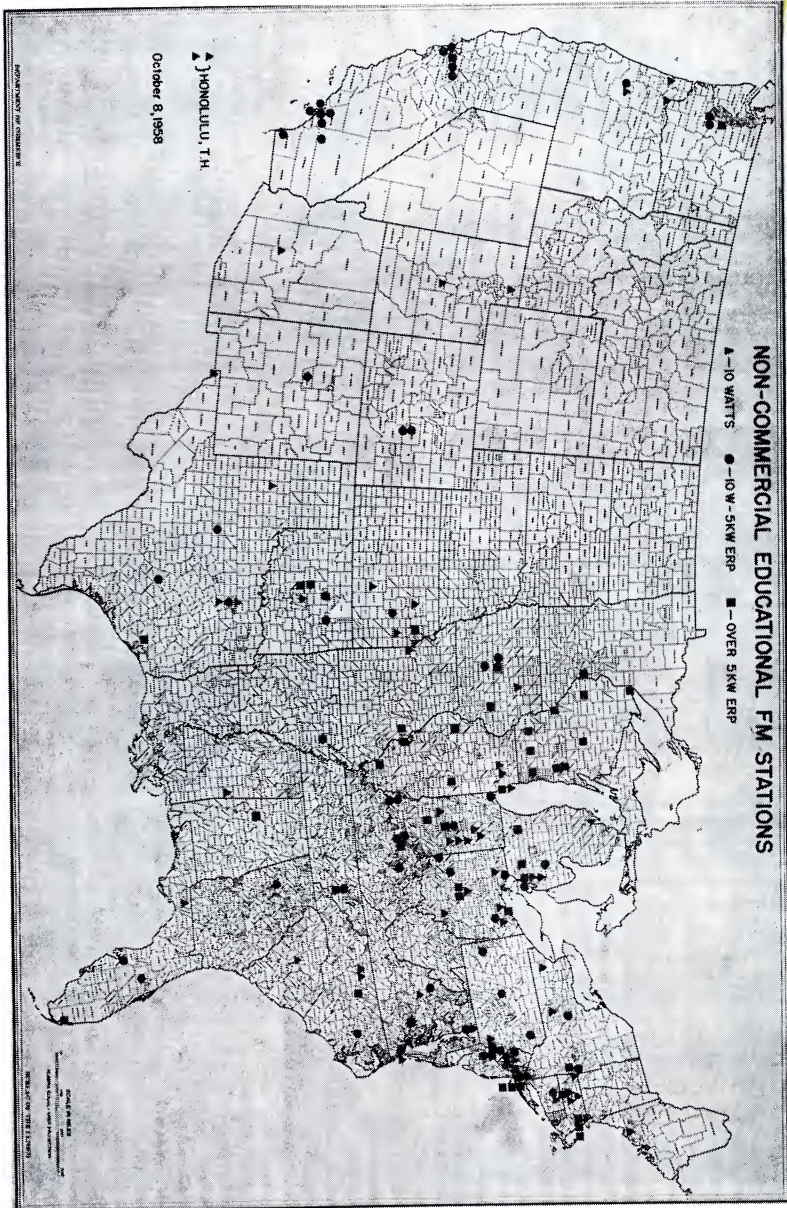
ETV STATIONS ON THE AIR

KCTS	Seattle, Wash.	9
KETA	Okla. City, Okla.	13
KETC	St. Louis, Mo.	9
KLSE	Monroe, La.	13
KNME-TV	Albuquerque, N. M.	5
KOAC-TV	Corvallis, Ore.	7
KQED	San Francisco, Calif.	9
KRMA-TV	Denver, Colo.	6
KTCA-TV	St. Paul, Minn.	2
KUED	Salt Lake City, Utah	7
KUHT	Houston, Tex.	8
KUON-TV	Lincoln, Neb.	12
WAIQ	Andalusia, Ala.	2
WBIQ	Birmingham, Ala.	10
WCET	Cincinnati, Ohio	48
WEDU	Tampa, Fla.	3
WETV	Atlanta, Ga.	30
WFPK-TV	Louisville, Ky.	15
WGBH-TV	Boston, Mass.	2
WHA-TV	Madison, Wis.	21
WHYY-TV	Philadelphia, Pa.	35
WILL-TV	Urbana, Ill.	12
WIPR-TV	San Juan, P. R.	6
WJCT	Jacksonville, Fla.	7
WKNO-TV	Memphis, Tenn.	10
WMVS-TV	Milwaukee, Wis.	10
WOSU-TV	Columbus, Ohio	34
WQED	Pittsburgh, Pa.	13
WTHS-TV	Miami, Fla.	2
WTIQ	Munford, Ala.	7
WTTW	Chicago, Ill.	11
WTVS	Detroit, Mich.	56
WUFT	Gainesville, Fla.	5
WUNC-TV	Chapel Hill, N. C.	4
WYES-TV	New Orleans, La.	8

"Tape Recorder Directory—Each year Audio Devices, Inc. publishes a tape recorder directory as one of the issues of their magazine "Audio Record." They have kindly provided us with some so that we may fill your requests for single copies. Just drop a card to NAEB Headquarters.

—N A E B—

*Best wishes for a Merry
Christmas and a Happy
and Prosperous New Year!*



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